

Amendments to the Drawings:

The attached sheet of drawings includes changes to Figure 4 showing that it depicts "Prior Art".

This sheet, which includes Figure 4, replaces the original sheet including Figure 4.

Attachment: Replacement Sheet (1)

REMARKS

Claims 1-7 and 9-20 are pending in the present application. Claims 7 and 9-20 are withdrawn from consideration. Claims 1, 3 and 4 are amended by this Response.

Applicant also notes that filed concurrently herewith to perfect the claim for priority in the present application is a verified English translation of the priority document, i.e., DE 10 2004 521.3.

Drawings

The Examiner asserts that Fig. 4 should be designated by a legend such as "Prior Art" because only that which is old is illustrated. Applicant submits that Fig. 4 is amended to include the legend "Prior Art."

Claim rejections under 35 USC § 112

The Examiner asserts that there is insufficient antecedent basis for the limitations "the field oxide" and "the field oxide area" in claims 3 and 4. Claims 3 and 4 are amended herein to provide a proper antecedent basis. Accordingly, Applicant respectfully requests the rejections under 35 USC § 112 be withdrawn.

Claim Rejections under 35 USC § 102 and 103

Claims 1-3 stand rejected under 35 USC § 102(b) as being anticipated by Fujihira (U.S. Pat. No. 6,097,063, hereinafter "Fujihira"). Claim 4 stands rejected under 35 USC § 103(a) as being unpatentable over Fujihira in view of Hossain et al. (U.S. Pat. No. 6,448,625, hereinafter "Hossain"). Claim 5 stands rejected under 35 USC § 103(a) as being unpatentable over Fujihira

in view of Dudek et al. (U.S. Pat. No. 7,064,385, hereinafter “Dudek”). Claim 6 stands rejected under 35 USC § 103(a) as being unpatentable over Fujihira in view of Evans (U.S. Pat. No. 6,521,962, hereinafter “Evans”). Applicant respectfully traverses these rejections.

Initially, Applicant notes that the Examiner appears to interpret “the depth of a well” as a distance between an upper boundary of the well and a lower boundary of the well within a relevant area. However, Applicant’s example embodiments show that the lower boundary of the n-conductive well 11 and the p-conductive well 12 extend varying distances into an underlying layer, for example, from a single reference point, e.g., an upper layer or surface of the transistor. Claim 1 is amended to clarify the distances involved in positioning the lower boundaries of the n-conductive well and the p-conductive well from the upper surface of the transistor.

Applicant notes that the amendments to the claims are supported at least by Fig. 1 which clearly shows the upper surface of a high-voltage PMOS transistor, the curvature of the lower boundaries of the wells 11 and 12, and the manner in which the curvature produces different depths, (e.g., distances to the lower boundaries of the wells), relative to the upper surface of the high-voltage PMOS transistor. Further, Applicant’s specification at page 8, lines 17-23 discloses “The invention now provides for the bottom of the p well 12 to extend deeper into the n well 11 underneath the drain terminal 14 than underneath the field oxide 13 and the gate electrode 18. At the same time, the well bottom of the n well 11 extends less deeply into the substrate 10 underneath the drain terminal 14 than in the other areas of the well.” Accordingly, Applicant’s example embodiments allow for the distance from the lower boundary of a well to the surface of the transistor to vary in different regions. For example, the lower boundary of a well may extend into underlying layers at varying distances in different regions.

Fujihara at Fig. 10 and column 16, lines 9-20 discloses a p-type drain/drift region 14 in the shape of a well formed in the n-type channel diffusion layer 3, the n-type channel diffusion layer 3 formed on a p⁻-type semiconductor layer 4. However, nowhere does Fujihara disclose that the lower boundaries of the p-type drain/drift region 14 and the n-type channel diffusion layer 3 extend at varying distances into underlying layers or that the lower boundaries of the p-type drain/drift region 14 and the n-type channel diffusion layer 3 extend at varying distances from a surface of the MOSFET illustrated in Fig. 10. Further, Fig. 10 of Fujihara clearly shows that the lower boundaries of the p-type drain/drift region 14 and the n-type channel diffusion layer 3 do not extend varying distances, let alone extend at varying distances underneath the p⁺-type source region 18 and p⁺-type drain region 19. In particular, a lower boundary of the n-type channel diffusion layer 3 is disclosed in Fig. 10 of Fujihara as a line positioned at a distance from an upper surface of the MOSFET that does not vary, and which does not extend into the p⁻-type semiconductor layer 4 at varying distances. Similarly, the p-type drain/drift region 14 fails to extend at varying distances into the n-type channel diffusion layer 3.

Accordingly, Fujihara fails to disclose “a lower boundary of the n-conductive well extends a shorter distance into the p-conductive substrate away from an upper surface underneath said drain region than the lower boundary of the n-conductive well extends into the p-conductive substrate away from the upper surface underneath said source region, and a lower boundary of the p-conductive well extends a farther distance into the n-conductive well away from the upper surface underneath said drain region than the lower boundary of the p-conductive well extends into the n-conductive well away from the upper surface underneath a region lateral to said drain region,” as required by amended claim 1.

Applicant respectfully submits that even assuming for the sake of argument that Fujihara, Hossain, Dudek and Evans are properly combinable (which Applicant does not admit), Hossain, Dudek and Evans fail to cure the deficiencies of Fujihara discussed above in regard to claim 1. Accordingly, Applicant respectfully submits claim 1 distinguishes over the applied prior art.

Claims 2-6, which depend from claim 1, distinguish the invention over the applied prior art for at least the same reasons discussed above in regard to claim 1 as well as on their own merits.

Further, Applicant addresses the Hossain reference, which was cited by the Examiner with respect to claim 4. Fig. 1 of Hossain describes a gate contact 118. The gate contact 118 slightly overlaps the field oxide layer 107. However, the gate contact 118 does not function as a field plate modifying the electric field in a drift path. On the contrary, Hossain discloses at col. 2, lines 53-54 that "the P-top layer 108 is formed inside the n-well 113 for charge balancing." Accordingly, Hossain fails to disclose "a field plate formed by a metal layer extends at a predefined distance above a field oxide" as required by amended claim 4. As such, claim 4 is distinguishable over the cited art for at least this additional reason.

Still further, Applicant notes that filed concurrently herewith to perfect the claim for priority in the present application is a verified English translation of the priority document, i.e., DE 10 2004 521.3. Applicant respectfully submits that the Dudek reference cited by the Examiner does not have an effective U.S. filing date which is earlier than the earliest priority date of the present application, i.e., February 27, 2004. Accordingly, the Dudek reference is disqualified as prior art for the present application.

In view of the above, Applicant respectfully requests the rejections under 35 USC § 102(b) and 103(a) be withdrawn.

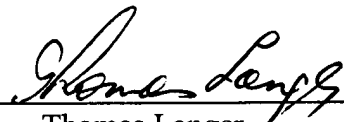
CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1-6 in connection with the present application is earnestly solicited.

Any additional fees or charges required at this time in connection with the present application may be charged to our Patent and Trademark Office Deposit Account No. 08-0750.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Thomas Langer at the telephone number of the undersigned below.

Respectfully submitted,
COHEN PONTANI LIEBERMAN & PAVANE LLP

By 
Thomas Langer
Reg. No. 27,264
551 Fifth Avenue, Suite 1210
New York, New York 10176
(212) 687-2770

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